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ENVIRONMENT

Mr. Keith Krawczyk
Project Coordinator
MDNRE-RRD-Superfund
Constitution Hall – 3rd Floor South
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Lansing, Michigan 48909-7926

Subject:
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
King Highway Landfill Operable Unit 3
Completed Repairs to the King Highway Landfill Final Cover System

Date:
October 25, 2012

Contact:
Patrick McGuire

Phone:
315.671.9233

Email:
pat.mcguire@arcadis-us.com

Our ref:
B0064583.0003.00907

Dear Mr. Krawczyk:

On behalf of Georgia-Pacific LLC (Georgia-Pacific), this document has been prepared to provide the Michigan Department of Environmental Quality (MDEQ) with notification and documentation that repair activities have been completed to the final cover system at the King Highway Landfill Operable Unit 3 (KHL OU) of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site located in Kalamazoo, Michigan.

Repair activities were performed according to the June 27, 2012 *Stressed Vegetation Sampling Results and Work Plan* (Work Plan), which was approved by MDEQ via an email message on July 3, 2012. The Work Plan provided sample results from observed stressed vegetation within the final cover system of the KHL and proposed corrective measures to be implemented based on the sample results. The corrective measures included removal of a portion of the final cover soils; inspection of the existing 40 mil linear low-density polyethylene (LLDPE) geomembrane liner; repair of any observed breaches in the geomembrane liner; if necessary, replacement of cover soils; placement of imported topsoil, seed, mulch, and fertilize as needed to establish vegetative growth; and repair of several other areas of observed stressed vegetation through the placement of imported topsoil, seed, mulch, and fertilize as needed to establish vegetative growth. Areas of stressed vegetation are shown on Figure 1.

Terra Contracting, LLC (Terra) mobilized equipment, materials, and personnel to the KHL on August 27, 2012 to begin repair of the final cover system. ARCADIS personnel (Georgia-Pacific representative) as well as CDM Smith personnel (MDEQ representative) were also onsite to observe and document the repair activities.

Terra began repair activities by hydro-excavating an approximate 12-foot by 15-foot area around stressed vegetation area SV-A (refer to Figure 1) where previous soil gas sampling conducted within the area resulted in methane detected above the lower explosive limit. The area was hydro-excavated down to the existing 40 mil LLDPE geomembrane liner, as depicted in Photo 1 in Attachment A. Once the existing geomembrane liner was unearthed, a tear and several small holes were observed in the geomembrane liner, within an approximate 9-foot by 12-foot area of the liner. Chesapeake Containment Systems, Inc. (Chesapeake; the geomembrane liner installation subcontracted to Terra) inspected the breach in the existing liner and determined that the breach could be patched with new 40 mil LLPDE geomembrane liner acquired from the Willow Boulevard/A-Site Operable Unit (WB/A-Site OU) construction project, which met quality controls required for the WB/A-Site OU construction project.

On August 28, 2012, Chesapeake removed the damaged portion of the existing 40 mil LLDPE geomembrane liner (an approximate 9-foot by 12-foot area) from SV-A (refer to Photos 2 and 3 in Attachment A), and prepared a patch from the new 40 mil LLDPE geomembrane liner. Chesapeake then welded the new patch of geomembrane liner to the existing 40 mil LLDPE geomembrane liner using an extrusion welder (refer to Photos 4 and 5 in Attachment A). Once the patch was welded to the existing geomembrane liner, Chesapeake vacuum box tested the welded patch seams to verify that the welds were sufficient to resist leakage.

On August 29, 2012, Terra placed backfill in stressed vegetation area SV-A over the patched geomembrane liner; the backfill included a 24-inch thick layer of general fill followed by a 6-inch thick layer of topsoil (refer to Photos 6 though 8 in Attachment A) imported from the WB/A-Site OU construction project. General fill and topsoil materials met quality controls required for the WB/A-Site OU construction project. Terra prepared the backfilled area for seeding by grading the area with a landscape rake. Terra also placed topsoil and regraded the low-lying area in the drainage swale along the northern access road where ponding was previously observed (SV-D) (refer to Photo 9 in Attachment A).

On August 30, 2012, Terra placed topsoil and regraded stressed vegetation area SV-B (immediately south of stressed vegetation area SV-A) and SV-H (at the southeast corner of the site) (refer to Photo 10 in Attachment A).

On August 31, 2012, Cardno JFNew Native Plant Nursery seeded and mulched the new topsoiled areas (i.e., areas SV-A, SV-B, SV-D, and SV-H) to establish vegetative growth. ARCADIS will continue to monitor these areas for vegetative growth during subsequent quarterly landfill inspections; based on observations of the

established vegetative growth, ARCADIS will provide recommendations for watering or additional topsoil, seed, and/or mulch.

Stressed vegetation areas SV-C and SV-E through SV-G had been identified in the Work Plan but were not repaired because recent rainfall had promoted grass growth. Based on observations of grass growth by ARCADIS and CDM Smith prior to the initiation of repair activities, it was determined that these areas did not require topsoil application.

Additionally, on October 4, 2012, ARCADIS completed maintenance activities associated with the area of exposed geotextile (approximately 4 foot by 1 foot) located at the southeast corner of the landfill, immediately north of landfill gas cutoff trench (Trench C). This patch of exposed geotextile was determined not to be associated with the geomembrane liner of the final cover system. A 4-inch thick layer of topsoil was placed over the area of exposed geotextile and the topsoil was seeded (with residual grass seed from the aforementioned stressed vegetation repair activities) and mulched to facilitate vegetative growth. Refer to Photos 11 and 12 included in Attachment A.

If you have any questions or comments, please do not hesitate to contact me at 315.671.9233.

Sincerely,

ARCADIS

Patrick McGuire
Principal Environmental Engineer

Copies:
Daria Devantier, MDEQ
Judith Alfano, MDEQ
Michael Berkoff, USEPA Region 5
Garry Griffith, P.E., Georgia-Pacific
Dawn Penniman, P.E., ARCADIS
Michael Kohagen, ARCADIS

Attachments:
Figure 1 – Stressed Vegetation and Geomembrane Liner Repair Locations
Attachment A – Photo Log

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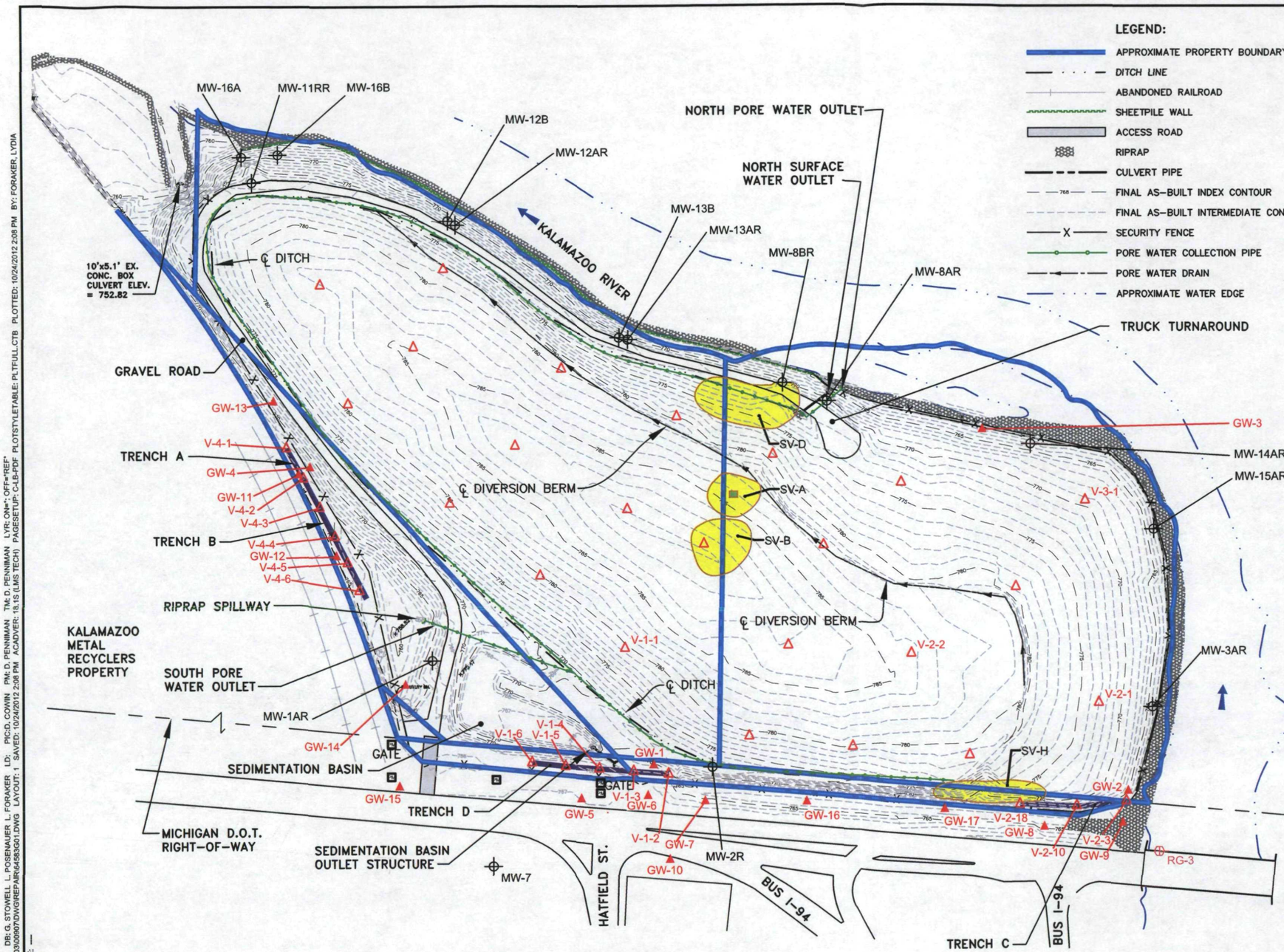
Figure 1

Stressed Vegetation and
Geomembrane Liner Repair
Locations



LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- DITCH LINE
- ABANDONED RAILROAD
- SHEETPILE WALL
- ACCESS ROAD
- RIPRAP
- CULVERT PIPE
- 768 FINAL AS-BUILT INDEX CONTOUR
- FINAL AS-BUILT INTERMEDIATE CONTOUR
- SECURITY FENCE
- PORE WATER COLLECTION PIPE
- PORE WATER DRAIN
- APPROXIMATE WATER EDGE
- GAS VENTS (ORIGINAL 23; ONLY FOUR WERE GIVEN IDs)
- V-1-2 CUTOFF TRENCH GAS VENTS
- LANDFILL GAS CUTOFF TRENCH
- FLOW DIRECTION
- MW-14 MONITORING WELL
- RG-3 RIVER GAUGE STATION
- GW-2 LOCATION OF GAS MONITORING PROBES
- SV-B APPROXIMATE LOCATION OF REPAIRED STRESSED VEGETATION OR AREA OF HYDRO-EXCAVATION BACKFILLED WITH GENERAL FILL AND TOPSOIL
- APPROXIMATE LOCATION OF BREACH IN GEOMEMBRANE LINER PATCHED WITH NEW 40 MIL LLDPE

NOTES:

1. BASE MAP INFORMATION OBTAINED FROM CADD DRAWING FILE DEVELOPED BY RMT, INC., ANN ARBOR, MICHIGAN (CADD FILE: L1630SU01.DWG AS-BUILT SURVEY; 8/21/00).
2. FINAL AS-BUILT CONTOUR ELEVATIONS ARE SHOWN AND ARE BASED ON A FIELD SURVEY BY ATWELL-HICKS, INC., DATED 9/27/00 WITH REVISIONS DATED 10/23/00, 12/21/01, 12/10/02, AND 7/24/03.
3. FINAL AS-BUILT CONTOUR ELEVATIONS OF SEDIMENTATION BASIN ARE BASED ON A FIELD SURVEY BY PREIN & NEWHOF, DATED 2/3/04.
4. PROPERTY BOUNDARY, AND FINAL AS-BUILT CONTOUR ELEVATIONS OF PARCEL C AND SURROUNDING AREAS BASED ON A FIELD SURVEY BY PREIN & NEWHOF, DATED 11/19/2010.
5. ELEVATIONS ARE BASED ON NGVD OF 1929 (MSL).
6. PROPERTY SURVEY PERFORMED BY WILKINS & WHEATON ENGINEERING CO., INC., ON 7/1/96.
7. TOPOGRAPHIC CONTOUR INTERVAL IS 1 FOOT.
8. LOCATIONS OF GW-5, GW-6, GW-7, GW-8, GW-9, AND GW-10 ARE BASED ON A FIELD SURVEY BY TERRA CONTRACTING LLC, DATED 9/23/05.
9. LOCATION OF GW-11 IS BASED ON A FIELD SURVEY BY TERRA CONTRACTING LLC, DATED 1/11/06.
10. LOCATIONS OF RG-6, V-4-4, V-4-5, AND V-4-6 ARE BASED ON A FIELD SURVEY BY TERRA CONTRACTING LLC, DATED 6/7/06.
11. LOCATIONS OF V-1-2 THROUGH V-1-6, V-2-3, V-2-10, AND V-2-18 ARE BASED ON MULTIPLE FIELD SURVEYS CONDUCTED BY TERRA CONTRACTING, LLC. IN APRIL 2008. GAS VENTS V-2-4 THROUGH V-2-9, AND V-2-11 THROUGH V-2-17 ARE NOT SHOWN FOR CLARITY PURPOSES (THESE VENTS ARE LOCATED ALONG TRENCH C).
12. LOCATION OF GW-12 IS APPROXIMATE.
13. LOCATIONS OF GW-13 THROUGH GW-17 BASED ON FIELD SURVEY CONDUCTED BY PREIN & NEWHOF ON 11/1/11.
14. LOCATION OF SHEETPILE WALL AND A PORTION OF THE MONITORING WELLS ARE BASED ON A FIELD SURVEY BY ATWELL-HICKS, INC. DATED 9/27/00.
15. PARCELS 1, 2, 10, A, B, AND THE TRIANGLE PARCEL ARE OWNED BY GEORGIA-PACIFIC.
16. GEORGIA-PACIFIC PURCHASED THE "TRIANGLE PARCEL" FROM THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) IN EARLY 2006.
17. GEORGIA-PACIFIC PURCHASED PARCELS A (PREVIOUSLY OWNED BY MDOT) AND B (PREVIOUSLY OWNED BY THE CITY OF KALAMAZOO) IN JUNE 2008, WHICH ARE LOCATED IN THE PORTION OF THE KING HIGHWAY (M-96) RIGHT-OF-WAY THAT IS ENCLOSED BY THE KING HIGHWAY LANDFILL SITE BOUNDARY FENCE.
18. STRESSED VEGETATION AREAS SV-C, AND SV-E THROUGH SV-G (ORIGINALLY IDENTIFIED IN THE JUNE 27, 2012 STRESSED VEGETATION SAMPLING RESULTS AND WORK PLAN) WERE NOT REPAIRED, AS THE GRASS GROWTH IN THESE AREAS HAD IMPROVED SINCE THEIR ORIGINAL DISCOVERY DUE TO RECENT RAINFALL AND DID NOT REQUIRE TOPSOIL APPLICATION. AREAS SV-C, SV-E, SV-F, AND SV-G ARE NOT SHOWN ON THIS FIGURE.

ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE

COMPLETED REPAIRS TO THE KHL FINAL COVER SYSTEM

STRESSED VEGETATION AND GEOMEMBRANE LINER REPAIR LOCATIONS

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FIGURE 1

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: G.STOWELL L: POSENAUER L: FORAKER LD: PIC:D.COWIN PM: D. PENNIMAN TM: D. PENNIMAN LYR: ON="; OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\B0064583\0003\00907\DWG\REPAIR\64583G01.DWG LAYOUT: 1 SAVED: 10/24/2012 2:08 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: C-LB-PDF PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 10/24/2012 2:08 PM BY: FORAKER, LYDIA
XREFS: IMAGES: PROJECTNAME: —
64583X01
64583X00

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Attachment A

Photo Log

Photo No. 1: Hydro-excavation of stressed vegetation area SV-A (Location depicted on Figure 1).

Photo No. 2: Hand digging stressed vegetation area SV-A and breach in existing 40 mil LLDPE geomembrane liner.

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**COMPLETED REPAIRS TO THE
KING HIGHWAY LANDFILL FINAL COVER SYSTEM**

PHOTO LOG

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ATTACHMENT
A

Photo No. 3: Breach in 40 mil LLDPE geomembrane liner within stressed vegetation area SV-A.

Photo No. 4: Chesapeake Containment Systems, Inc. welding the patch over the breach to the existing 40 mil LLDPE geomembrane liner at SV-A.

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COMPLETED REPAIRS TO THE KING HIGHWAY LANDFILL FINAL COVER SYSTEM

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Photo No. 5: New 40 mil LLDPE geomembrane liner patch welded over breach in existing 40 mil LLDPE geomembrane liner at SV-A.

Photo No. 6: Backfilling general fill over the repaired 40 mil LLDPE geomembrane liner within stressed vegetation area SV-A.

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**COMPLETED REPAIRS TO THE
KING HIGHWAY LANDFILL FINAL COVER SYSTEM**

PHOTO LOG

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Photo No. 7: Placement of a 24-inch layer of general fill over the repaired 40 mil LLDPE geomembrane liner within stressed vegetation area SV-A.

Photo No. 8: Placement of 6-inches of topsoil over a 24-inch-thick layer of general fill within stressed vegetation area SV-A.

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COMPLETED REPAIRS TO THE KING HIGHWAY LANDFILL FINAL COVER SYSTEM

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Photo No. 9: Placement of topsoil and grading of the low-lying area in the drainage swale along the north access road where ponding water was previously observed (SV-D; Located depicted on Figure 1).

Photo No. 10: Placement of topsoil and grading of stressed vegetation area SV-H (Located depicted on Figure 1).

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**COMPLETED REPAIRS TO THE
KING HIGHWAY LANDFILL FINAL COVER SYSTEM**

PHOTO LOG

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ATTACHMENT
A

09/26/2012 SYRACUSE, NY-ENV/CAD DJHOWES
B0064583/0003/00907/CDR/64583P05.CDR

Photo No. 11: Area of exposed geotextile at the southeast corner of the King Highway Landfill.

Photo No. 12: Completed repairs to the area of exposed geotextile at the southeast corner of the King Highway Landfill.

ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE

**COMPLETED REPAIRS TO THE
KING HIGHWAY LANDFILL FINAL COVER SYSTEM**

PHOTO LOG

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